an SMR-based vendor will be forced to operate under more stringent spectrum constraints than either cellular or PCS providers, given the fact that the entire 800 MHz SMR band accounts for 14 MHz of spectrum,6/ while each cellular operator has 25 MHz of exclusive spectrum allocated to it and a PCS licensee may be able to aggregate as much as 40 MHz of spectrum.

These spectrum disadvantages are significant. The wireless marketplace of the future is likely to be driven by costs of delivering the services demanded by subscribers and by the functionalities made possible by the wireless system. Spectrum economics will be a major determinant of cost, hence of competitiveness. The economics of the cell-based systems -- such as cellular, MIRS, or PCS -- make it far more economical to add capacity by increasing the number of channels assigned to an existing cell than by further subdividing cells to facilitate greater frequency reuse.7/ In addition, modern wireless telecommunications systems require substantial infrastructure investments that only can be recouped if the system can serve a large number of subscribers and offer them a reasonable range of services. These factors, then, compel the licensing of larger rather than smaller wide-area wireless systems. Conversely, if

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6/ Because this 14 MHz is licensed on a site-by-site basis and is shared among multiple licensees, no one SMR licensee has exclusive use of the channels throughout a geographically-defined area. This is in contrast to cellular and PCS authorizations which provide exclusive spectrum to the licensee throughout a geographic area. For these reasons, the effective yield of the non-contiguous spectrum Nextel has accumulated is far less than 10 MHz in each of its service areas. See Comments of Nextel in GN Docket No. 93-252, filed June 20, 1994, at pp. 28-35.

7/ Of course, the precise trade-off between cell subdivision and channel addition as means of expanding capacity depends on the costs of reconfiguring the cells versus the opportunity costs of channels. However, no matter what these relative costs are, on the per subscriber basis, the average costs in a 200-channel system must be lower than the cost that would be achieved if the same subscriber base were served on four 50-channel systems. This follows from the fact that a 200-channel system can always replicate the network architecture of four 50-channel systems and then realize significant savings in system-wide fixed costs.

SMR-based providers are constrained to less efficient systems, they will be weaker competitors in the CMRS marketplace. In sum, the block licensing features of the proposed rules will be procompetitive and consistent with the public interest.

4. SMR WON'S OPPOSITION TO THE FNPRM LACKS ECONOMIC MERIT AND SHOULD BE REJECTED

SMR WON, a consortium of unidentified SMR operators, has voiced the most direct opposition to the FNPRM. Stripped to its essentials, the SMR WON opposition has two elements: (1) that awarding a 200-channel block to a single provider will harm competition in the market for "traditional dispatch" services; and (2) that the 200-channel block should not be awarded because consumers do not want the type of services the wide-area systems will offer. Both propositions lack economic merit and are not supported by facts.

A. Traditional Dispatch Services

The principal thrust of the SMR WON opposition is that traditional dispatch services constitute a discrete relevant market that will be harmed by allowing a single provider to hold a 200-channel block of contiguous frequencies. SMR WON's position is flawed as a matter of economics and fact.

The Commission has properly defined the market in a dynamic, forward-looking manner that correctly takes into account the wide array of services that are already being offered by wireless telecommunications providers and that are likely to be offered in the future. The Commission's broad market definition is entirely consistent with the analytic principles stated in the 1992 Department of Justice/Federal Trade Commission Horizontal Merger Guidelines. Under the Guidelines' market definition methodology, distinct services are included in the same relevant product market if those services substantially constrain each other's pricing. The Commission has concluded that various wireless services are likely to constrain each other's pricing now and in the future, as regulatory and technological barriers to inter-service competition disappear, and as each provider becomes further capable of offering a wide range of services that will be readily substitutable in the eyes of the potential subscribers. In fact, there is already

evidence of the competitive effects from wide-area SMR on cellular pricing: the mere announcement of Nextel's plans to introduced ESMR services in California in the Summer of 1994 caused cellular providers to reduce their rates up to 17 percent.

SMR WON is not, however, concerned with the benefits to the public from enhanced competition that the digital wide-area SMR systems will have on the pricing of cellular services. Rather, SMR WON argues that the deregulatory initiatives embodied in the FNPRM will reduce competition in the provision of the "traditional" dispatch service.8/ The narrow market definition urged on the Commission by SMR WON shows only how blinded this commenter is to the dynamic changes spreading through the wireless telecommunications industry, and to the Commission's prior policy initiatives designed to stimulate competition in the provision of "dispatch" services.

But let us stay for a moment with this static view of the "dispatch" market and consider the actual competitive realities. First of all, it is important that the Commission not fall into the trap of accepting SMR WON's contention that only SMR systems provide traditional dispatch services. As the Commission is well aware, the entire private radio service is devoted to traditional fleet dispatch services. According to SMR WON's economic consultants EMCI, in their publication, "The State of SMR and Emerging Private Radio Markets: 1992-1993," there were approximately 14.7 million mobile radio units in service in 1992, of which just 1.2 million were on the 800 MHz SMR band. Even when public safety

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8/ SMR WON points to the fact that the Antitrust Division alleged a traditional dispatch market in its complaint accompanying its settlement of the Nextel/Motorola merger case. Nextel, of course, flatly rejects the notion that such a market exists and has never admitted that traditional dispatch constitutes a relevant antitrust market. This is not important here. What is important is that the Department of Justice concluded that limited divestitures of 900 MHz frequencies would resolve the competitive concerns expressed in the complaint. Thus, at least to the Department, 800 MHz and 900 MHz services compete with each other: a position that SMR WON disregards. SMR WON, therefore, gains scant support from the settlement on which they base their arguments.

units are removed from those numbers, 800 MHz SMR units represented just 12 percent of the total units in service.9/

Realistically, other private radio services must be factored into the analysis of viable options that are open to a customer who desires a "bare bones" traditional radio dispatch. An undetermined but large number of private radio users obtain service in so-called "community repeater" groups that operate in similar fashion to traditional analog, non-interconnected SMR systems. The typical subscriber to a community repeater is not visibly different from a typical SMR subscriber: a small fleet operator with five to seven units in the construction and service industries. Moreover, the option of establishing one's own internal private radio network can be an attractive alternative for some dispatch users, depending on, among other factors, fleet size and communications needs. In any case, these other alternatives likely would become attractive if the prices for traditional dispatch on 800 MHz systems were to increase significantly for a non-transitory period of time.

The competitive constraint exercised by cellular providers over SMR pricing of dispatch has not yet reached its full force. It is clear, however, that the competitive interaction between the two will only increase over time, particularly as cellular rates fall in response to SMR and PCS entry into the CMRS marketplace, and as the cellular providers further increase their capacity by converting their systems to digital technology. Even at today's rates, some SMR customers clearly view cellular as a viable alternative to fleet dispatch. In Nextel's experience, for example, over five percent of the overall dispatch attrition rate is due to subscribers converting to cellular and/or paging. Indeed, actual characteristics of use between cellular and private radio service indicate that many customers can

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9/ Incidentally, these figures also undermine SMR WON's contention that the link-up between Nextel and Motorola coupled with Nextel's acquisition of 800 MHz frequencies will destroy competition in the provision of traditional mobile units (handsets) and backbone. Obviously, the bulk of the hardware demand will not be affected by these transactions.

use them interchangeably.10/ And, of course, those SMR customers who demand interconnect service are purchasing a service that is a close substitute for cellular service on many key dimensions.11/ In sum, as the number of providers of mobile telephony services increases, price competition will intensify.12/ At these lower price points, traditional dispatch offered in a limited geographic area will become less attractive to a vast majority of current dispatch subscribers.

One, however, does not need to look to community repeaters or cellular for alternative sources of dispatch services. New SMR services are emerging on 900 MHz and 220 MHz bands, including announced plans by certain providers to form advanced wide-area networks. Moreover, the Commission's ongoing initiatives to rationalize and expand the various private radio services through narrow-banding , refarming, and other mechanisms, will add to the radio spectrum capacity that will be available for dispatch services.

B. Demand for Enhanced SMR Services

SMR WON also asserts that the block licensing proposal should be rejected because consumers do not desire the types of services that will be made possible on enhanced SMR networks. There are several things wrong with this viewpoint. First, it is the market, and not SMR WON, that should determine as much as possible what services consumers do or do not want. If SMR WON is proved correct, investors in advanced wireless networks will suffer the financial consequences. There is no need, however, for SMR WON (or the Commission) to

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10/ For example, a preponderance of communications on radio systems is one-to-one and not one-to-many.

11/ Some fleet owners may be concerned about the use of cellular telephones by employees from the mobile units for non-business calls. This problem will be obviated in the digital cellular systems because the handset can be programmed to reject calls to unauthorized numbers. This feature is available on Nextel's wide-area SMR handsets.

12/ See EMCI Report, paras. 35 and 36.

protect those investors from themselves. It is also important to note that SMR WON is being rather disingenuous in making this argument. After all, it also argues in the same submission that block-licensing will inhibit SMR WON's own wide-area ambitions.

More fundamentally, while it is true that many dispatch customers currently purchase only limited services, seeking only basic radio communications, this is no indication of the services they will be willing to purchase as new competitively-priced services become more widely available. To the contrary, it seems much more likely that competition in the markets in which mobile radio subscribers compete will drive them inexorably to higher technology wireless telecommunications services. A plumber who can access from his handset a computer data base with parts pricing or service records, will gain competitive advantage over a competitor with bare-bones dispatch service. It must be recognized, as the Commission has done over and over again, that in the future access to information anytime and anywhere will be a key competitive input, and not a luxury for the select few.

In advancing its arguments that enhanced SMRs will not find adequate demand for their services, SMR WON incorrectly assumes that all subscribers to those advanced wide-area systems will be compelled to obtain the same level of service. Clearly, not all passengers flying a 747 from New York to London obtain the same level of service, even though they all use the same capital intensive equipment. The same observation applies to customers who will be served on capital-intensive wireless radio systems. One important feature of modern wireless systems is the use of intelligent switching technologies that allow *a la carte* service provision and pricing. Those subscribers who demand enhanced services can obtain them on an incremental cost basis, while others can limit their purchases to a more basic package of services.

SMR WON is equally incorrect in assuming that infrastructure costs of these sophisticated wireless systems will be imposed upon unwilling consumers without regard for their willingness to pay or the services they consume. If paging services

can be obtained more cheaply from stand-alone paging companies than from a company that offers paging as a part of an integrated package, the stand-alone service price will constrain what can be charged by an integrated system. Nextel's pricing follows this basic principle. Its dispatch price is competitive with stand-alone dispatch service, while its mobile telephone service is competitive with prices charged by cellular providers. Given the various ways consumers will be able to obtain dispatch services -- such as providers on 800, 900, and 220 MHz bands, community repeaters, private networks, PCS, computer-aided data services, and most likely digital cellular -- the capital costs of advanced systems will not be foisted on those customers who only wish to obtain basic dispatch service. These customers will pay rates that are competitive with those offered elsewhere. If at those rates, advanced providers of SMR services earn some contribution towards the infrastructure costs, so much the better for all the users of those systems.

In sum, it is incorrect to conclude, as does EMCI, that "These [wide-area] systems are unlikely to develop a business plan which focuses on providing economical communications services to local or regional customers, because cellular-like systems are not optimized to meet economical business communications needs."13/ The owners of these advanced systems will develop business plans that will enable them to earn reasonable returns on their investments. These plans will be driven by the perceived mobile communications demands of diverse types of consumers. Proponents of the advanced wide-area systems are investing in new technologies on the belief that these consumers will demand these more sophisticated wireless services. If the demand does not materialize, the invested capital will have been wasted, and the spectrum will migrate to other uses. If the demand is there, the entrepreneurs and the capital markets will have done their job of moving 800 MHz spectrum resources to more valuable uses, as compared with the uses to which this spectrum is being put

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13/ EMCI Report, p. 10.

today. In either case, however, market forces -- not the whim of a competitor wedded to an older, less efficient technology -- will have made the choice.

5. THE PROPOSED AUCTION AND RETUNING WILL NOT HARM SUBSCRIBERS OR OPERATORS

The existing allocation of spectrum on the 800 MHz band lessens the ability of SMR vendors to participate as effectively as possible in the evolving wireless telecommunications marketplace. Balkanized channel allocations hamper introduction and development of efficient technologies. Conflicting licenses make it difficult to offer roaming and wide-area coverage. As EMCI notes, roaming and wide-area coverage is a functionality that consumers want, as attested by the fact that several consortia that include members of SMR WON have been formed with the goal of providing wide-area coverage. Wide-area licenses will correspond to the same consumer need.

A. Retuning.

In order to facilitate introduction of new technologies, stimulate competition, and provide consumers with the services they want, the Commission has decided to assign the top 200 channels on the 800 MHz band to wide-area operators. Given the way licenses have been awarded until now, it is impossible to designate a block of 200 contiguous channels without also mandating retuning, i.e., relocating existing license holders from the 200-channel SMR block to the lower 80-channel SMR block (and 800 MHz General Category channels) on an as-needed basis.

SMR WON has raised many objections to the retuning plan proposed by Nextel. Reading through their comments, one may get the impression that retuning has never occurred in the SMR industry. In fact, retuning is frequent. Every time an SMR operator adds frequencies, such as from five channels to 10 channels, each and every mobile requires retuning.

Hence, it is not retuning as such, and the alleged concern for the customer whose service may be temporarily disrupted by the retuning process, that forms that basis for SMR WON's objection to the plan. Its comments indicate that what

SMR WON is really concerned with is the opportunity to make a profit from the proposed channel allocation changes introduced by the Commission. SMR WON recognizes that the potential wide-area licensees will benefit from being able to offer service on the contiguous block of channels. What SMR WON wants is to share in some of those benefits; after all, since the members of SMR WON hold licenses to some of those desirable channels, they believe that they should be compensated for relinquishing them in amounts greater than the costs of being relocated to another frequencies.

From the public policy perspective, there is nothing that automatically requires that the pre-existing licensees share in the benefits that will possibly flow from the more efficient use to which the spectrum will be put. Such sharing would be more appropriate if the licensees had made irrevocable investments in developing the spectrum for commercial use. However, under the retuning plan, they will be made whole by means of compensation for the costs and disturbance to their business operations that will result from relocation.

B. Warehousing of Channels

SMR WON also suggests, in line with its view that there is not enough demand for the advanced wide-area service, that the winners of the 200-channel auction will warehouse some of the channels to the detriment of the public. The Commission has in the past mandated stringent construction and system loading schedules to minimize inefficient warehousing of channels and proposes to do so here.

In any case, it is easy to overstate the alleged inefficiencies. First of all, to the extent that it is more efficient to award channels for wide-area licenses in one 200-channel block as opposed to four 50 channel blocks, "warehousing" is just an element of the transition path to more efficient spectrum utilization. It is no different from a situation in which an entrepreneur has to first assemble a large package of inputs before production can commence. In fact, it would be very inefficient, if not outright impossible, to require that SMR providers wishing to build out wide-area systems bid for frequencies on an as-needed basis. Second,

the bidder who has paid a full price for the channels at the auction has potent incentives to use these channels productively to generate the revenue needed to recover its up-front investment.

Finally, auctioning a 200-channel block with mandatory retuning minimizes opportunities for the types of "greenmail" that have been prevalent in the SMR industry. Given the benefits of contiguous channels to the competitiveness of wide-area SMRs, auctioning smaller wide-area blocks would benefit speculators by elevating their ability to acquire frequencies and to warehouse them for speculative gain.

6. CONCLUDING COMMENT

The Commission's proposal to license a 200-channel block of frequencies on the 800 MHz band for advanced, wide-area mobile service is a forward looking policy initiative that will enhance competition in the evolving mobile telecommunications market. The proposal, once implemented, will remove the key obstacles that wide-area SMR providers face in their quest to become full-fledged participants in that exciting segment of telecommunications. The proposal will not harm those customers who continue to demand "traditional dispatch" services. Instead, it will offer a wider range of choices at competitive prices to those subscribers who rely on information delivered anytime and anywhere as an important source of competitive advantage.

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HONORS:

1973	The highest distinction for the doctoral dissertation
1971-1972	Honorary President's Fellow Columbia University
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1967-1968	Honors Student McGill University
1964, 1965	Award for Academic Achievement Department of Political Economy Warsaw University
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PROFESSIONAL POSITIONS:

6/82 - Present	Professor of Economics Department of Economics New York University
8/91 - 10/92	Deputy Assistant Attorney General for Economics Antitrust Division U.S. Department of Justice
9/89 - 7/90	Visiting Professor of Economics School of Management and Organization Yale University
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3/84 - 6/88	Visiting Professor of Economics, Universita Commerciale "Luigi Bocconi" Milan, Italy
6/82 - 2/85	Director of Graduate Studies Department of Economics New York University
9/82 - 6/86	Adjunct Professor of Law (part-time) Columbia University Law School
2/82 - 6/82	Acting Director of Graduate Studies Department of Economics New York University
6/78 - 6/82	Associate Professor of Economics New York University
9/79 - Present	Lecturer in Economics and Antitrust New York University Law School
9/77 - 6/78	Member Technical Staff Bell Laboratories Holmdel, New Jersey
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PROFESSIONAL POSITIONS: (continued)

Summer 1976	Legal Institute for Economists University of Miami Center for Law and Economics
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OTHER PROFESSIONAL ACTIVITIES:

1994 - Present	Senior Affiliate Law and Economics Consulting Group Berkeley, CA
1994 - Present	Senior Affiliate Consultants in Industry Economics, LLC
1993 - 1994	Director Consultants in Industry Economics, Inc.
1992 - 1993	Vice-Chair (Pro Tem), American Bar Association Economics Committee
1992 - Present	Senior Consultant Organization for Economic Cooperation & Development
1990 - 1991	Senior Consultant Organization for Economic Cooperation & Development
1991	Member, Ad-hoc Working Group on Bulgaria's Draft Antitrust Law The Central and East European Law Initiative American Bar Association
1990 - 1991	Advisor to Polish Ministry of Finance and Anti-Monopoly Office
1990 - 1991	Member, American Bar Association Section of Antitrust Law Special Committee on International Antitrust
1990 - 1991	Director and Senior Advisor Putnam, Hayes & Bartlett, Inc.
1990 -	Member American Bar Association Section of Antitrust Law Predatory Pricing Monograph Task Force
1989	Competitive Issues in the Cable TV Industry Testimony in the Senate Antitrust Monopolies and Business Rights Subcommittee Washington, D.C. (April 12, 1989)

OTHER PROFESSIONAL ACTIVITIES: (continued)

1989	Member American Bar Association EEC Merger Control Task Force
1988 -	Associate Member American Bar Association
1987 - 1989	Adjunct Member Antitrust and Trade Regulation Committee The Association of the Bar of the City of New York
1984	Speaker American Bar Association, National Institutes, "Industrial and Intellectual Property: The Antitrust Interface" Philadelphia, Pennsylvania
1983 - 1990	Director Consultants in Industry Economics, Inc.
1982	Member, Organizing Committee Tenth Annual Telecommunications Policy Research Conference Annapolis, Maryland
1981	Member, ABA Section 7 Clayton Act Committee Project on Revising Merger Guidelines
1980	Organizer, Invited Session on Law and Economics American Economic Association Meetings Denver, Colorado
1978 - 1979	Member, Department of Commerce Technical Advisory Board Scientific and Technical Information Economics & Pricing Subgroup

Referee for numerous scholarly journals, publishers, and the National Science Foundation.

MEMBERSHIP IN PROFESSIONAL SOCIETIES:

American Economic Association
American Bar Association

PUBLICATIONS:

A. Journal Articles

"On the Perils of Vertical Control by a Partial Owner of Downstream Enterprise," with W.J. Baumol, Revue D'Economie' Industrielle, No. 69, 3e Triemestre 1994, 7-20.

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C. Book Chapters

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ATTACHMENT B

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NON-SMR CATEGORY APPLICATIONS FOR EXPANSION OF SMR SYSTEMS

On November 23, 1994, the Industrial Telecommunications Association, Inc., ("ITA"), coordinated the addition of new channels to SMR stations licensed to the following companies: Clarks Electronics, ("Clarks"), and Idaho Communications LP, ("Idaho"). On this same date, ITA coordinated single channels for two new stations for Business Radio, Inc. On January 26, 1995 ITA also coordinated additional channels for a station licensed to Idaho Communications LP. All of these companies are represented on the Board of Directors of SMR WON. All of these stations are located in the Idaho - Oregon - Washington border area and five are located within 35 miles of Lewiston, Idaho.

Tabulated below are the stations licensed to Clarks and Idaho for which the additional frequencies were coordinated, the number of previously licensed channels, the additional number of channels coordinated, the previously reported loading data, and the loading data claimed by the applicants in the applications for new channels.

Clarks Electronics

Call	Licensed Channels	Channels Added	Previously Reported Loading	Newly Reported Loading
WNNW300	10	5	12	1100
WNNW304	3	6	350	774
WNUD527	5	4	350	600

Idaho Communications LP

Call	Licensed Channels	Channels Added	Previously Reported Loading	Newly Reported Loading
WNXA929	3	4	0	500
KNIY811	5	3	*1/	1100

The above stations all operate as trunked SMR, "YX", stations. All of the channels proposed to be added to these systems come from the General Category and Industrial/Land Transportation Category channel groups. Trunked SMR stations adding either General Category or Industrial/Land Transportation Category channels can be authorized only one more channel than their loading warrants.2/

1/ Interestingly, the loading claims of this licensee are as follows:

(1)	April 25, 1990	8 mobiles
(2)	March 1994	360 mobiles
(3)	July 31, 1994	3183 mobiles
(4)	November 1994	1100 mobiles

2/ Paragraph 90.621(g)(2) states:

> (2) Channels in the Industrial/Land Transportation and Business categories will be available to fully-loaded SMR systems if no SMRS category frequencies are available. Evidence must be provided that the SMR applicant has sufficient users to warrant the authorization of additional channels. If available, the SMR licensee will be authorized no more than one channel more than its current loading warrants.

Paragraph 90.621(g)(3) states in part:

> (3) Channels in the General Category are available to fully-loaded trunked Public Safety, Industrial/Land Transportation, Business and SMR Category systems for expansion provided that:
>
> (ii) As a result of the addition of any unused channels in the General Category to